TERMS OF REFERENCE (TOR)

Assessment of climate risks on water resources for National Adaptation Plan (NAP) formulation process in Bhutan

GENERAL INFORMATION

Services/Work Description: International Consulting Firm
Project/Program Title: Preparation of a National Adaptation Plan (NAP) for Bhutan, with a focus on the water sector
Type of the Contract: Institutional Contract/Contract for Professional Services
Scope of Advertisement: International
Duration: 120 working days (spread over eight months)
Expected Start Date: September 2020

I. BACKGROUND

The Kingdom of Bhutan launched its NAP process in 2015 with the definition of a national NAP road-map, which is an update of the National Adaption Programme of Action for Climate Change 2012. This NAP project aims to build on Bhutan’s Nationally Determined Contribution (NDC) by accelerating the NDC vision with focus on the priority sectors and scaling up from medium to long-term adaption planning. The readiness project will support the Royal Government of Bhutan to advance its NAP process by building on existing capacities and enhancing institutions already in place for adaptation planning through the following outcomes:

1. Enhanced coordination, learning and knowledge management for an iterative NAP process,
2. Technical capacity enhanced for the generation of climate scenarios and impact assessment,
3. Vulnerability assessments undertaken, and adaptation options appraised and prioritized, and
4. NAP formulated and capacity for implementation and monitoring established.

These outcomes will address identified barriers to adaptation planning in Bhutan through the formulation of a NAP and the strengthening of institutional frameworks and systems to enable long-term decision making for climate change adaptation.
Water being cross sectoral in nature and realizing its criticality, the current NAP Project for Bhutan provides prime focus on the water sector. Water is one of the major resources for Bhutan and is blessed with 94,500m$^3$/capita/annum. However, with the changing climate, the water sources are dwindling and drying up, experience of wetter summer months and drier winter months and increased melting of glaciers. Such situation has multiples effects on various sectors, in particular those sectors that are primarily dependent on water, such as Drinking and Sanitation, Agriculture, Hydropower and others.

There are many studies being conducted with respect to Climate Change Impacts (CCI) on different sectors, each with different scopes and objectives. In this respect, it has become pertinent to synthesize and comprehend all this information and fill-up the missing gaps and needs to develop and come up with a comprehensive and holistic analysis of the climate risk completely geared towards water resources. This assessment will ultimately assist and help water sector come up with an adaptation plan.

The output 3 of the NAP Project focusses CCI on the water resources. While apprising and prioritizing adaptation options, the National Integrated Water Resources Management Plan (NIWRMP)-2016 will be integrated into the adaptation options for making an informed decision.

II. OBJECTIVE OF THE ASSIGNMENT

The objective of this assignment is to evaluate and identify, and develop adaptation plan for water sector by carrying out detailed national impact assessment of climate change on water resources, determining and projecting the water availability and demand on the sectors, namely Drinking and Sanitation, Agriculture and Hydropower production and possible inclusion of other sectors.

The detailed national impact assessment on water resources will be further trickled down from national level to district and to Gewog (block) level.

The assessment and analysis shall also include CCI on water resources of/in four urban centres of Thimphu, Phuentsholing, Gelephu, and Samdrup Jongkhar and flexibility to include other water stressed districts.

With above vulnerability assessment, adaptation options will be designed and planned by integrating NIWRMP-2016 to meet the water demand of various sectors.

For building up the institutional capacity, a training programme will be developed for the focus group and NAP technical Working group with the task learning-by-doing on the above assessment, analysis and the development of adaptation plan.
III. KEY TASKS OF THE ASSIGNMENT

Task 1: Desk-based research and Inventory

- Stocktaking and complete comprehensive review of available information regarding water and climate risk assessments in Bhutan, including relevant studies and data sources,
- Prepare list of water stakeholders for accessing the information and consultation,
- Match the available information against objectives and scopes of the activity. If there are missing data and gaps, prepare approach and methodology to overcome the situation with justification of the selected choices,
- Understand and prepare the development objectives of the key water sectors and needs for integrating climate risk information, and
- Suggest formulation of focus group to work along with the experts for knowledge transfer and taking ownership.

Task 2: Consultation and preparation

- Based on the desk study and inventory, obtain the relevant and required data and other information to assess and map the national impact of climate change on water resources, which trickles down from national perspective to district to gewog level,
- Accordingly, through consultation, suggest objectives and purpose along with outcome indicators for climate risks and vulnerabilities on water, and identify uncertainty and disagreements,
- Follow up consultations with key stakeholders regarding the finding of information, review, proposed recommendations, approach and methodology, and agree on details of analyses to be undertaken as well as the timeline,
- Considering the uncertainties in the modelling due to the short time data series and the lack of some data in the water sector, Decision Making under Uncertainty (DMU) method could be applied. DMU would identify short term adaptation actions, and identify triggers, tipping points and conditions that would need to be monitored to determine when and which future adaptation actions need to be taken. Also, as per the River Basins Management Plan –NIWRMP,2016– River Basin Approach could be applied,
- Data collection and preparation should also include CCI on water resources of/in four urban centres of Thimphu, Phuentsholing, Gelephu, and Samdrup Jongkhar and flexibility to include other water stressed districts,
- Development of training programme for the knowledge transfer to the focus group through learning-by-doing, and
- Compile and create user-friendly database of the dataset collected and designate a centralized agency for hosting and maintaining the updated information.
Task 3: CCI, associated risks and analyses

With the involvement of the focus group,
- Undertake CCI assessment comprehensively and holistically for climate risk on water resources and, exposure and vulnerability analysis,
- The assessment and analysis should look into scenarios determining and projecting the water availability and demand on the sectors, namely Drinking and Sanitation, Agriculture and Hydropower production and other sectors from national to district to gewog level,
- Special focus and attention will be given to the four major urban centres, namely Thimphu, Phuentsholing, Gelephu and Samdrup Jongkhar,
- Evaluate a full range of water development and management options and scenarios, taking account of multiple and competing uses of water systems,
- Quantify the degree of the vulnerability, and
- Identify triggers, tipping points and scenarios describing the uncertainties.

Note: The assessment and analyses could use a software tool for integrated water resources planning (e.g. WEAP/Bhutan Water Security Index System or any other recommended tool)

Task 4: Identify adaptation options

With the involvement of the focus group, adaptation options and preferred pathways will be identified and evaluated by considering the following:

- Assess efficacy of adaptation options,
- Identify tipping point conditions and timing,
- Explore adaptation and development pathways, and
- Evaluate pathways and illustrate trade-offs.

Note: the adaptation options should be identified taking cross-sectoral issues into account and examining the nexus between sectors such as water and sanitation, agriculture and hydropower. Adaptation options should include both ecosystem-based adaptation and physical infrastructure and potential for Public Private Partnership.

Task 5: Design an adaptation plan

- Design adaption plan through consultative way regarding adaptation options, risks, vulnerabilities and how to manage,
- Guide the key water stakeholders to select the preferred pathways, identifying short-term actions and long-term options, and
- Design a monitoring plan for signals and trigger values.
Task 6: Synthesize findings and draft assessment report

Task 7: Present findings and recommendations to key stakeholders.

As a complement to the assessment report, prepare a presentation and policy brief that delivers the assessment findings and recommendations in a simplified manner and with an eye toward actionable decision-making.

IV. KEY DELIVERABLES

1. An Inception report, which includes a summary of the context as per the objectives and tasks assigned, agreed approach and methodology, work-plan and timeline,
2. Final report as per the agreed structure, which will contain, a) findings from assessments and analysis undertaken under Task 3, b) Design an adaption plan and proposal for an adaptation pathway outlining short and long-term along with their corresponding trigger points and timing as per Task 4 and 5, and c) Monitoring plan for signals and trigger values,
3. Submission of associated data and GIS based maps and related files of the analysis undertaken,
4. Development of a comprehensive and user-friendly database on all the climate and water related data reviewed,
5. Recommend a centralized agency for hosting and maintaining the updated information and linkages with other sectors on information uploading and sharing,
6. Build up institutional capacity for assessment, analysis and the development of adaptation plan, and
7. Presentation and policy brief summarizing the finding of the assessments and recommendations targeting decision makers in the key sectors.

V. PAYMENT MILESTONES AND AUTHORITY

The consulting firm will indicate the cost of services for each deliverable in US dollars when applying for this consultancy. The consultant will be paid based on the effective UN exchange rate (where applicable). In accordance with UNDP rules, the lump sum contract amount to be offered should consider the professional fee inclusive of travel, communications, out of pocket expenses, and other ancillary costs.

The qualified consulting firm shall receive his/her lump sum service fees upon certification of the completed tasks satisfactorily, as per the following payment schedule:

<table>
<thead>
<tr>
<th>Activities/Deliverables</th>
<th>Target Due Dates</th>
<th>Schedule of Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inception report which includes a summary of the context as per the objectives and tasks assigned,</td>
<td>First week of September 2020</td>
<td>30% of the contract amount.</td>
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</table>
agreed approach and methodology, and work-plan

<table>
<thead>
<tr>
<th>Submission of Draft Report containing:</th>
<th>Last week of December 2020</th>
<th>40% of the contract amount.</th>
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<tbody>
<tr>
<td>● Findings from analysis and assessments on climate risks, vulnerabilities undertaken</td>
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<tr>
<td>● Validated proposal for an adaptation pathway outlining short-term and long-term along with their corresponding trigger points and timing</td>
<td></td>
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<tr>
<td>● Monitoring plan for signals and trigger values</td>
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| Finalization of the reports and submission of the policy brief | Last week of April 2021 | 30 % of the contract amount. |

VI. APPROACH OF THE WORK
The Consulting Firm will strictly follow the work plan and the time schedule agreed with UNDP as per the guidance from Water Resources Coordination Division (WRCD) of NECS in undertaking the contract assignment, some of which are as follow:

- An appropriate approach and methodology will have to be determined by the Consulting Firm in consultations with the UNDP and NECS, as per the Tasks,
- Approach and methodology will presented during the inception meeting for suggestion and endorsement,
- A dedicated focus group will be formed to work along with the experts for knowledge transfer and building up the institutional capacity,
- The Consulting Firm will undertake collection of all the required data/information from various sources. The NECS will facilitate in collection of the data/information with required official letters and contact with focal person(s) wherever required,
- The Consulting Firm will facilitate in presentations and coordination of the stakeholder workshops as per the agreed work schedule,
- The Consulting Firm will keep minutes of the meetings/workshops, and
- Considering the current COVID-19 situation, the Consultant is expected to use innovative solutions for stakeholder consultation, where face-to face meetings and group discussions are not possible.

The approach and methodology should be clearly documented in the report including comprehensive details of the following:

i. Documents reviewed (internal and external analyses),
ii. Interviews and meetings conducted,
iii. Consultations held with all key stakeholders and feedback received, and
iv. Techniques and approaches used for data/information gathering, verification, filling
up the missing data gaps and analysis undertaken.

VII. DURATION AND TIMEFRAME OF THE WORK

i. The duration of contract shall be for 120 person days spread over from September
2020 to last week of April 2021, and
ii. Delay in submission of the report as per the agreed time schedule will be liable for
payment of penalty as per the contract agreement.

VIII. INSTITUTIONAL ARRANGEMENT / REPORTING RELATIONSHIPS

The Consulting Firm shall work under the direct supervision of the Project Manager/Technical
Coordinator, NAP Project, UNDP with the guidance from WRCD on day-to-day activities and
submit reports as required and agreed in the work plan/time schedule.

IX. DUTY STATION

The assignment will entail frequent consultations with institutions and staff based in Thimphu
and districts/municipalities. Remaining tasks will be home-based. UNDP will not provide office
space. The International experts need to undertake travel to Bhutan once the travel restrictions
are eased by the Government.

X. TEAM COMPOSITION AND QUALIFICATION

The following requirements are a broad description of the likely expertise needed for this
consultancy assignment. The Consultant may propose additional experts and/or suggest for
different team composition in the Technical Proposal as may be needed to fulfil this TOR. The
Consultant may mobilize supporting technical experts (e.g. stakeholder engagement specialist)
and administrative staff as necessary to execute the scope of services. The Consultant is
encouraged to engage diverse team compositions, including a mixture of genders. Proposed
duration of assignment of the experts should align to the proposed approach and methodology,
work plan, and based on the proposed team composition.

The Consultant is expected to:

- be a firm, institution or an association of individual consultants with appropriate and
  adequate capabilities, resources, and experience to execute the full extent of the scope
  of services to a very high quality,
- have extensive experience designing and conducting integrated water resources planning
  assessments under changing climate and variability in developing country contexts
  (experience in Bhutan and the Himalayan region would be advantageous),
- have a proven record of completing at least three similar assignments successfully, and
- formulate a dedicated project team with the relevant qualifications, work experience,
  engagement of diverse stakeholders, communication skills (English), and project
  management skills.
The suggested team composition is as follows:

a. **International Team Leader /Water management Specialist**

Should have at least 15 years of experience in leading project teams and integrated water management and adaptation planning. The specialist will be responsible for the overall performance, timeliness and quality of all deliverables; lead the project team and development of all outputs; provide technical inputs on integrated water management and adaptation planning and design adaptation planning using Decision Making under Uncertainty; facilitate stakeholder consultation meetings and workshops; and be the key point of communication for the UNDP Project Manager. The Team Leader shall have:

- an advanced university degree in a relevant discipline such as water management, hydrology or related areas;
- excellent working knowledge and experience in undertaking integrated climate risk and vulnerability assessment in the water sector, and adaptation planning during project design and implementation;
- in-depth knowledge of climate science and water systems modeling – Hydrology, Hydraulic, and River basin approach –, including familiarity with the climate models available and software enabling integrated water planning;
- Experience in evaluating a full range of water development and management options considering multiple and competing uses of water systems;
- proven team leadership and project management skills, including ability to lead the team by coaching and mentoring team members to achieve individual inputs, and be responsible for the overall quality of deliverables;
- excellent project management capability, including managing teams of national and international experts;
- excellent communication skills, presentation skills, and an ability to prepare and manage the development of high-quality reports, project documentation, and communications materials;
- demonstrated experience working in the region or similar contexts, and working with development partners; and
- the ability to behave in a professional, client-focused, and service-oriented manner, with strong problem-solving skills.

b. **National Water specialist**

Should have at least 10 years of experience in integrated water resources management. The specialist will be responsible for providing technical inputs on water planning and management to all outputs; contribute to stakeholder consultation meetings and workshops; and perform any other tasks as required by the Team Leader. The Specialist shall have:

- an advanced university degree in a relevant discipline,
- excellent communication skills, presentation skills, and an ability to prepare and
manage the development of high-quality reports, project documentation, and communications materials;
● experience in GIS based mapping; and
● In-depth knowledge of the water resources and policies in Bhutan.

c. National GIS/Data management Specialist
Should have at least 10 years of experience in developing databases and GIS-based tools. The specialist will be responsible for providing technical inputs on data management to all outputs; produce user-friendly displays of the results; and perform any other tasks as required by the Team Leader. The Specialist shall have:

● an advanced university degree in a relevant discipline,
● Familiarity in using appropriate computer application software for the purpose,
● excellent communication skills, presentation skills, and an ability to prepare and manage the development of high-quality reports, project documentation, and communications materials, and
● specialist will support the water specialist in developing water resources database and provide decision support system.

XI. RECOMMENDED PRESENTATION OF PROPOSAL
The International consulting firm will indicate the cost of services for each deliverable in US Dollars when applying for this consultancy. The International consulting firm will be paid based on the effective UN exchange rate (where applicable). In accordance with UNDP rules, the lump sum contract amount to be offered should consider the professional fee inclusive of travel, communications, out of pocket expenses, and other ancillary costs.
The Technical Proposal document must be submitted along with the following documents:

● A brief background of the applicant firm and a letter of intent,
● Evidence of experience in undertaking similar works (provide examples and referees),
● Technical proposal: A summary of the approach and methodology and timelines for ensuring completion of work by required time,
● CVs of the lead consultant and key team members, and
● Financial proposal (all-inclusive lump sum amount with cost breakdown).

Interested individual is requested to submit proposal in electronic format through procurement.bt@undp.org before midnight of 31st August 2020, Bhutan Standard Time.

XII. CRITERIA FOR THE SELECTION OF THE BEST OFFER
The selection of the best offer will be based on Combined Scoring method – where the qualifications and methodology will be weighted a max. of 70% and combined with the price offer which will be weighted a max of 30%.
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<th>Criteria</th>
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<td><strong>Technical</strong></td>
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<td>be based on the following</td>
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<td>Expertise and experience of</td>
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<td>the Team Leader;</td>
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<td>Quality of technical proposal</td>
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<td>(methodology)</td>
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<td><strong>Sub-Total A. (Technical)</strong></td>
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<tr>
<td>Financial</td>
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<td>30</td>
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<td><strong>Sub-Total B. (Financial)</strong></td>
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